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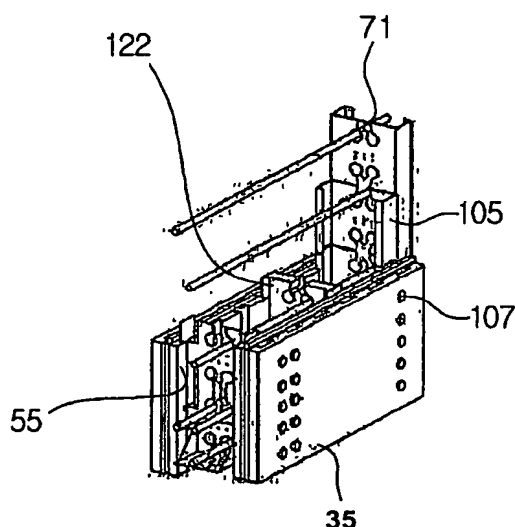
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(54) Title: FIBER REINFORCED CEMENT BOARD AND FOAM PLASTIC INSULATED STAY IN PLACE FORMS SYSTEMS WITH PERFORATED METAL STUD FOR CENCRETE REINFORCED STRUCTURE



(57) Abstract: Disclosed herein is a form panel system that is capable of constructing a frame structure including a wall of a concrete-based building and a concrete structure including various retaining walls for civil-engineering works. The form panel system comprises compression cement boards disposed opposite to each other while being spaced a predetermined distance from each other, the compression cement boards being reinforced with fiber materials, reinforcing boards obtained by forming the compression cement boards in predetermined shapes, or foamed plastic heat insulating panels, and metal plate studs disposed between the compression cement boards. The metal plate studs are composed of metal plates having predetermined thicknesses and distances therebetween, which are selected depending on the durability of concrete. Each of the metal plate studs has at least one opening formed therein. Each of the metal plate studs is provided at both opposite side ends thereof with bent parts. The metal plate stud is fixed to the respective compression cement boards by means of fixing pieces, and concrete is injected and cured into the space between the compression cement boards, to which the metal plate studs are fixed and the foamed plastic heat insulating panels are attached. According to the present invention, the fiber-reinforced compression cement boards, the foamed plastic heat insulating panels, the metal plate studs having the openings are vertically or horizontally arranged without limits.

AMENDED CLAIMS

**[Received by the International Bureau on 31 March 2005 (31.03.05):
new claim 12 added; remaining claims unchanged (4 pages)]**

[CLAIMS]

[Claim 1] A form panel system comprising:

compression cement boards disposed opposite to each other while being spaced a predetermined distance from each other, the compression cement boards
5 being reinforced with fiber materials; and

at least one metal plate stud disposed between the compression cement boards, the metal plate stud being composed of a metal plate having a predetermined thickness, the metal plate stud having at least one opening formed therein, the metal plate stud being provided at both opposite side ends thereof with
10 bent parts, wherein

the metal plate stud is fixed to the respective compression cement boards by means of fixing pieces, and concrete is injected and cured into the space between the compression cement boards, to which the metal plate stud is fixed.

[Claim 2] The system as set forth in claim 1, further comprising:

15 at least one cement board reinforcing member linearly attached to the respective compression cement boards.

[Claim 3] The system as set forth in claim 1, wherein the metal plate stud is disposed vertically or horizontally, and a horizontal or vertical reinforcing member is inserted through the opening formed at the metal plate stud.

20 [Claim 4] The system as set forth in claim 3, wherein the opening has a width gradually decreased in one direction such that the horizontal reinforcing member is fitted in the opening due to the weight of the horizontal reinforcing member in a wedge coupling fashion.

[Claim 5] A form panel system comprising:

compression cement boards disposed opposite to each other while being spaced a predetermined distance from each other, the compression cement boards being reinforced with fiber materials;

5 foamed plastic panels disposed at the inside surface of at least one of the opposite compression cement boards, each of the foamed plastic panels being formed by means of electric heating wires; and

10 metal plate studs disposed between the compression cement boards and the foamed plastic panels or between the foamed plastic panels, each of the metal plate studs being composed of a metal plate having a predetermined thickness, each of the metal plate studs having at least one opening formed therein, each of the metal plate studs being provided at both opposite side ends thereof with bent parts, wherein

15 the metal plate studs are fixed to the compression cement boards and the foamed plastic panels by means of fixing pieces, and concrete is injected and cured into the space between the compression cement boards and the foamed plastic panels, to which the metal plate studs are fixed, or into the space between the foamed plastic panels.

[Claim 6] The system as set forth in claim 5, further comprising:
20 at least one cement board reinforcing member linearly attached to the respective compression cement boards.

[Claim 7] The system as set forth in claim 5, wherein each of the foamed plastic panels is provided at one side thereof with supporting grooves or slits, in which the metal plate studs are fixedly fitted.

25 [Claim 8] The system as set forth in claim 5, wherein the metal plate studs are disposed vertically or horizontally, and a horizontal or vertical reinforcing member is inserted through at least one of the openings formed at the metal plate

studs.

[Claim 9] The system as set forth in claim 8, wherein the at least one opening has a width gradually decreased in one direction such that the horizontal reinforcing member is fitted in the opening due to the weight of the horizontal
5 reinforcing member in a wedge coupling fashion.

[Claim 10] The system as set forth in claim 6, wherein:
the compression cement boards, to which the foamed plastic panels are attached, are connected to each other on the same plane by means of one-plane connecting members;
10 the foamed plastic panels are provided at both ends thereof with supporting grooves or slits, in which the one-plane connecting members are engaged; and
the one-plane connecting members are provided at one side thereof with latching protrusions, which are engaged in the supporting grooves or slits formed
15 at the respective foamed plastic panels connected to each other on the same plane so as to connect the foamed plastic panels to each other while concrete is prevented from leaking from the space between the foamed plastic panels connected to each other on the same plane, and concrete moves in the space between the opposite one-plane connecting members such that the concrete is
20 mixed and cured.

[Claim 11] The system as set forth in claim 6, wherein:
the compression cement boards, to which the foamed plastic panels are attached, are connected to each other on one plane, and simultaneously connected to the compression cement boards connected to each other on the opposite plane,
25 to which the foamed plastic panels are also attached, by means of two-plane connecting members;

the foamed plastic panels are provided at both ends thereof with slits, in which the two-plane connecting members are engaged; and

the one-plane connecting members are provided at both sides thereof with latching protrusions, which are engaged in the slits formed at the respective
5 foamed plastic panels connected to each other on one plane and on the opposite plane so as to connect the foamed plastic panels to each other while concrete is prevented from leaking from the space between the foamed plastic panels connected to each other on one plane and on the opposite plane, and concrete moves in the space between the foamed plastic panels such that the concrete is
10 mixed and cured.

[Claim 12]

A form panel system comprising:

foamed plastic panels disposed opposite to each other while being spaced a predetermined distance from each other, each of the foamed plastic
15 panels being formed by means of electric heating wires; and

metal plate studs disposed between the foamed plastic panels, each of the metal plate studs being composed of a metal plate having a predetermined thickness, each of the metal plate studs being provided at both opposite side ends thereof with bent parts,

20 wherein each of the foamed plastic panels is provided at one side thereof with supporting grooves or slits, in which the metal plate studs are fixedly fitted,

and concrete is injected and cured into the space between the foamed plastic panels.